



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/905,356	08/04/97	BELGARD	R RAB-97-002

PETER COURTURE
LAW+
993 HIGHLAND CIRCLE
LOS ALTOS CA 94024

LM02/1026

EXAMINER

NGUYEN, T

ART UNIT

PAPER NUMBER

2751

DATE MAILED:

10/26/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

081905,336

Applicant(s)

Belgard

Examiner

T Nguyen

Group Art Unit

2757

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 11/19/99 & 8/12/99.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 38-112 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 38-112 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

Art Unit: 2751

DETAILED ACTION

1. This is a response to the declaration, filed 1/19/99, and amendment, filed 8/2/97.
2. Claims 38-112 are pending.

Response to Arguments

3. Applicant's arguments with respect to claims 38-112 have been considered but are moot in view of the new ground(s) of rejection. Applicant's amendment to the claims requires new search and consideration. The amended claims are rejected using new arts. Accordingly, this office action is made final.

Claim Rejections - 35 U.S.C. § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 38-112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crawford (US 5,321,836) in view of Toy (US 4,400,774).

As to claims 38,43,48-49,53,54,56-57,60-61,66,70,77,82,86,87,89,92,95,98,101,104,107,110:

Crawford discloses a virtual memory management method and apparatus using segmentation and optional, independent paging mechanism. Crawford teaches the means for generating an actual physical address from a virtual address in a time period T (Figures 2 & 3, physical address is generated from a virtual address). Crawford teaches the virtual address

Art Unit: 2751

having both a segment identifier and a segment offset (Figure 2, virtual address has segment id and offset). Crawford teaches calculating a linear address based on the entire virtual address (linear address 32 (Figure 3) is calculated through segmentation, using the entire virtual address (Figure 2). Crawford teaches calculating the actual physical address based on the calculated linear address (the actual physical address is calculated from the linear address including a page frame and page offset through paging, Figure 3). Crawford teaches a bus interface circuit for physical memory access (Figure 1, interface between bus unit and main memory 13).

Crawford does not specifically teach generating a fast physical address related to the virtual address in a time $< T$. It is well-known in the art to generate fast/speculative/prefetch/predictive addresses to obtain faster access. For example, Toy discloses a non-segmented memory system with a speculative address generator as cache address unit 125, which uses previous address bits to predict new physical addresses (col 3 ln 54 - col 4 ln 25, Figure 1). This provides for a faster physical address generation if the desired physical address shares the same address bits. The speculative physical address can be generated before the actual/normal linear address is calculated (col 3 ln 54 - col 4 ln 25). The speculative address can be used for generating a faster memory access. Accordingly, it would have been obvious to one of ordinary skills in the art at the time of the invention to use Toy's teachings to generate a fast/speculative/predictive physical address related to the virtual address in a time $< T$ in Crawford's segmented memory system so that memory access can be performed more quickly.

As to claims 39,44,50,58,62,78,81:

Art Unit: 2751

Crawford in view of Toy teaches the fast/speculative/predictive physical address being generated for a faster memory access than through using the actual physical address, which is generated after the fast/speculative physical address (See response to claim 38).

As to claims 40,45,51,59,63,67,71,74,79,83,84,88:

Toy teaches canceling the memory access if the fast physical address does not equal the actual physical address(col 5 lns 13-49), otherwise the fast physical address access is completed.

As to claims 41,46,52,55,68,72,80,91,97,103,109:

Crawford in view of Toy teaches the fast physical address is generated based on combination of physical address information from a different virtual address, and partial linear address information relating to the virtual address by using previous address bits to generate the fast physical address(Toy col 4 lns 1-36; Crawford Figures 2 & 3).

As to claims 42,47,64,69,73,75,76:

Crawford in view of Toy teaches that the fast physical address can be generated before the actual/normal linear address is calculated (col 3 ln 54 - col 4 ln 25).

As to claim 65:

Toy teaches generating the speculative address using part of the previous address(col 3 ln 54 - col 4 ln 25).

As to claims 85,93,99,105,111:

Toy also teaches performing an actual memory reference after the fast memory reference is canceled(col 5 lns 13-49).

Art Unit: 2751

As to claims 90,96,102,108:

Toy also discloses the comparator for determining whether the second address translation can be used for a memory access as comparator 109(col 5 lns 13-49).

As to claims 94,100,106,112:

Toy also discloses a register for storing address information of previous virtual address(col 4 lns 25-37).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Than Nguyen whose telephone number is (703) 305-3866.


Application/Control Number: 08/905,356

Page 6

Art Unit: 2751

7. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.

Than Nguyen
October 21, 1999


EDDIE P. CHAN
SUPERVISORY EXAMINER